BY ORDER OF THE COMMANDER
GOODFELLOW AIR FORCE BASE

GOODFELLOW AIR FORCE BASE
INSTRUCTION 48-103

19 DECEMBER 2013

Aerospace Medicine

HAZARD COMMUNICATION (HAZCOM) PROGAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 48-1, *Aerospace Medical Program*, and establishes the procedures and responsibilities for the 29 Code of Federal Regulation (CFR) 1910.1200, *Hazard Communication*. This instruction applies to all United States civilian and military employees at Goodfellow Air Force Base (GAFB) who are routinely exposed to potentially hazardous materials. This standard requires each work area maintain the following: Hazardous chemical inventory, Material Safety Data Sheets on all items included in the hazardous materials inventory, a list of all non-routine tasks involving hazardous materials, and a description of any contracted services involving the use of hazardous materials. Ensure all records created as a result of processes prescribed in this publication are maintained according to AFMAN 33-363, *Management of Records* and disposed of according to the Air Force Records Disposition Schedule (RDS) at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional's chain of command. This publication may be supplemented at any level, but all direct Supplements must be routed to the OPR of this publication for coordination prior to certification and approval.

1. Program Components.

1.1. Each shop requiring a HAZCOM program shall keep HAZCOM information readily accessible to all employees in the workplace. While electronic versions are acceptable for training, a hard copy is required. **(Attachment 2*: HAZCOM Program Binder Content*)**. Below are the required components of a workplace hazard communication program.

1.2. Hazardous Chemicals Inventory.

1.3. Material Safety Data Sheet (MSDS).

1.4. Non-routine Tasks Involving Hazardous Material (HAZMAT).

1.5. Contractor Operations.

1.6. Employee Information and Training.

1.7. Labeling of Hazardous Material Containers.

1.8. ESOH-MIS Chemical/Hazardous Material Request/Authorization(s).

1.9. Workplace Specific Hazard Communication Training Program detailing workplace exposures and prevention plans **(Attachment 3*: Workplace Specific HAZCOM Training Template*)**.

2. Program Requirements.

2.1. Hazardous Chemicals Inventory.

2.1.1. Shop supervisors should not store more than a 10- to 15-day supply of hazardous materials in the work center area. Installation Civil Engineering/Logistic (CE/LG) may approve exceptions on a case-by-case basis. Attempts by work places to maintain "bench stock" supplies are highly discouraged and circumvent the intent of the Installation Hazardous Materials Program (IHMP).

2.1.2. Prior to new chemicals being introduced in the workplace, a request must be submitted through Enterprise Environmental Safety and Occupational Health-Management Information System (EESOH-MIS). The request will then be routed to the appropriate base agencies for approval. After approval of the authorization request as required by AFI 32-7086, *Hazardous Material Management*, the chemical will be added to the chemical authorization listing in EESOH-MIS.

2.2. Material Safety Data Sheet (MSDS).

2.2.1. MSDSs will be maintained at each work center and made readily available to all workers with potential occupational exposures. Information can be accessed through the Bioenvironmental Engineering (BE) office or the manufacturer of the chemical. Manufacturer proprietary information used by BE for risk assessment will not be disclosed to the workers. Electronic versions are acceptable and encouraged, though a paper copy shall be maintained as backup. The supervisor must ensure there is an adequate backup system for rapid access to hazard information in the event of an emergency including power outages, equipment failure, online access delays, etcetera.

2.2.1.1. Shop supervisors will provide a MSDS on all newly identified chemicals when requesting authorization to hazardous materials inventories. If a MSDS is unavailable locally, supervisors should contact the manufacturer for that item.

2.2.1.2. A MSDS will be procured for each manufacturer specific HAZMAT item as different manufacturers under the same National Stock Numbers (NSN) and/or chemical name do not necessarily contain the same formulation and ingredients.

2.2.2. Supervisors will notify the BE by utilizing the ESOH-MIS chemical authorization process each time a new potentially hazardous chemical or substance is introduced into the work area.

2.2.3. MSDSs inactive or no longer used on the installation shall be maintained for 30 years or longer where regulatory requirements exist according to paragraph 1.10.7.5.1 in AFI 32-7086_AETCSUP.

2.3. Non-Routine Tasks Involving Hazardous Materials.

2.3.1. The workplace supervisor will be responsible for developing a listing of all tasks performed by the shop on a non-routine (less than two times per year) basis. This listing will include hazard information associated with performing non-routine tasks as well as protective measures required during such tasks.

2.3.2. BE will review all non-routine task listings upon request by the workplace supervisor and during health risk assessment surveys to provide engineering, administrative and personal protective equipment (PPE) recommendations.

2.3.3. The workplace supervisor will include this non-routine task listing in the appropriate section in the workplace specific hazard communication training program.

2.3.4. The workplace will also provide negative documentation in the appropriate section in the workplace specific hazard communication training program for workplaces that do not perform non-routine tasks.

2.4. Contractor Operations: At locations where Air Force employees may be exposed to chemicals used by contractors, the contractor(s) will report the chemical usage to the hazmart and provide the MSDS for these chemicals to any affected workplace supervisor for inclusion into their MSDS file for worker review.

2.4.1. The contract administrator will also inform the contractor about the MSDS information available through the BE as requested, for inclusion in the contractor HAZCOM program.

2.4.2. The activity quality assurance evaluator will advise the work area supervisors and Air Force employees monitoring the performance of contractors of hazardous chemicals introduced by the contractor. This will be accomplished during the pre-performance conference and subsequently during the contract performance period.

2.4.3. The contract administrator will ensure the Federal Acquisition Regulation (FAR) clause 5352.223.9002, "Hazardous Material Identification and Material Safety Data," is included in all local procurement contracts for potentially hazardous materials. Contractors will provide MSDSs to BE for any new hazardous materials they may need to introduce onto the base.

2.5. Employee Information and Training.

2.5.1. BE will provide specific information to workplace supervisors during routine or special health risk assessment surveys that will include a listing of all hazards associated with work in the workplace and measures to protect the workers from those hazards.

2.5.1.1. BE and Public Health (PH) or a designated representative is the point of contact for occupational health education, and provides consultation on training and technical matters to work area/shop supervisors (or designated representatives) on the AF HAZCOM Program.

2.5.1.2. PH will assist workplace supervisors by making the appropriate training available for use to train workers. The information provided by BE will be incorporated into the training program.

2.5.2. Workplace supervisors, or designated representatives, will conduct HAZCOM training for all workers upon initial assignment in the workplace and when new chemicals are introduced into the workplace thereafter. Supervisors will ensure the appropriate functionals (i.e., PH, BE, base safety office, and fire department) review and approve the shop specific hazard communication training program for technical accuracy and completeness prior to implementation in the work area/shop. A template for this training program is available from BE.

2.5.3. Documentation of Training: Document training on AF 55, *Employee Safety and Health Record*, or in a computerized information management system designed to maintain training records. A cross-reference sheet may be used to show the location of employee training documentation.

2.5.4. Disposition of Training Records: AF 55 will be handled by supervisors according to AFI 91-302, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Standards*, paragraph 7.4.

2.6. Labeling of Hazardous Materials Containers: All containers of hazardous materials must be properly labeled as required by 29 CFR 1910.1200(f), *Labels and Other Forms of Warning* and DoDI 6050.5-H, *DoD Hazardous Chemical Warning Labeling System*.

3. Requests for Additional Information.

3.1. Workers desiring MSDS information or clarification may contact BE at extension 654-3126 or can review the MSDS at the BE office. BE personnel will review the MSDS with the employee and provide an explanation of the information.

4. After-Hours Procedures.

4.1. Requests after normal duty hours will be directed to the on-call BE representative through the Command Post at extension 654-3558.

KIMBERLEE P. JOOS, Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 48-1, *Aerospace Medicine Enterprise*, 23 August 2011

AFI 32-7086, *Hazardous Materials Management*, 1 Nov 2004

AFI 32-7086_AETCSUP, *Hazardous Materials Management*, 22 Jun 2007

AFI 33-364, *Records Disposition-Procedures and Responsibilities,* 22 Dec 2006

AFI 90-821, *Hazard Communication*, 30 Mar 2005

AFI 91-202, *The US Air Force Mishap Prevention Program*, 5 Aug 2011

AFI 91-203, *Air Force Consolidated Occupational Safety Standard,* 15 Jun 2012

AFI 91-302, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, 18 Apr 1994

AFMAN 33-363, *Management of Records,* 1 Mar 2008

Federal Standard 313D, *Material Safety Data, Transportation Data and Disposal Data from Hazardous Materials Furnished to Government Activities*, 21 Mar 2000

29 CFR 1910, *Occupational Safety and Health Standards*, 1 Feb 2008

29 CFR 1910.1200, *Hazard Communication*, 20 Mar 2012

DODI 6050.05, *Department of Defense Hazard Communication (HAZCOM) Program*, 15 Aug 2006

Adopted Forms

AF 55, *Employee Safety and Health Record*

AF 847, *Recommendation for Change of Publication*

AF 3952, *Chemical Hazardous Material Request Authorization Form*

DD Form 2861, *Cross-Reference*

Abbreviations and Acronyms

BE—Bioenvironmental Engineering

CE—Civil Engineering

CFR—Code of Federal Regulation

DoD—Department of Defense

ESOH—MIS - Environmental, Safety, and Occupational Health Management Information System

FAR—Federal Acquisition Regulation

HAZCOM—Hazard Communication

HAZMART—Hazardous Materials Pharmacy

HAZMAT—Hazardous Material

IHMP—Installation HAZMAT Management Program

LG—Logistics

MSDS—Material Safety Data Sheet

NSN—National Stock Number

ODS—Ozone Depleting Substances

OHA—Occupational Health Assessments

OI—Operating Instruction

OPR—Office of Primary Responsibility

OSHA—Occupational Safety and Health Administration

PH—Public Health

PPE—Personal Protective Equipment

Terms

Chemical— Any substance or mixture of substances.

ESOH-MIS— An AF approved automated system to store and maintain all information associated with environment, safety, and occupational health surveillance data and work area/shop requirements.

Employee— A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Office workers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

Exposure or Exposed— An employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).

Hazard Warning— Any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s).

Hazardous Chemical (HAZMAT)— Any chemical that is a physical or health hazard and requires an MSDS as defined in AFI 32-7086, *Hazardous Materials Management*, and all Class I and Class II ozone-depleting substances (ODS). Also known as hazardous material or HAZMAT.

Health Hazard— Includes materials which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

Immediate Use Materials— Any hazardous chemical that will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

Installation— For purposes of the Federal HAZCOM standard and this AFI, an installation is a single geographic location with one or more work area/shops. The AF does not constitute one installation and must have programs that address hazards at each installation. Note: 29 CFR 1910.1200 uses the term workplace instead of installation.

Label— An appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

Material Safety Data Sheet (MSDS)— Written or printed material concerning a hazardous chemical that is prepared according to 29 CFR 1910.1200.

Physical Hazard— Includes materials for which there is scientifically valid evidence it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Use— To package, handle, react, emit, extract, generate as a by-product or transfer.

Work Area/Shop— A room or defined space in an installation where hazardous chemicals are produced or used, and where employees are present. Note: Employees that often work outside the physically defined work area, such as pest management personnel during pesticide application or aircraft maintainers that take chemicals to the flightline, will have their hazards addressed as part of the work area/shop program.

Workplace— An establishment, job site, or project, at one geographical location containing one or more work areas.

Attachment 2

HAZCOM PROGRAM BINDER CONTENT

HAZCOM Program Binder

A2.1. The binder will have the following program components.

A2.1.1. Tab A References. The following references will be found in Tab A of the HAZCOM Binder:

A2.1.2. Tab A1. GOODFELLOWAFBI 48-103, *Hazard Communication (HAZCOM) Program* (referred to electronically or hardcopy) and HAZCOM Supervisors Training Certificate (Public Health/Web University).

A2.1.3. Tab A2. Bioenvironmental Engineering (BE) correspondence including, Occupational Health Assessments (OHAs) going back 2 years to include all assessment attachments.

A2.1.4. Tab A3. AFI 90-821, *Hazard Communication.*

A2.1.5. Tab A4. Workplace Specific Hazard Communication Training Program (coordinated and approved by BE, PH, Fire Department, and Safety).

A2.2. Tab B MSDS. MSDSs for all chemical used in the workplace or a cross-reference sheet**,** detailing the location of all MSDSs so they are readily available within the workplace to all workplace employees.

A2.3. Tab C Hazardous Material Inventory/Approvals.

A2.3.1. Tab C1. Hazardous Material Approvals. Copies of all current hazardous material approvals (ESOH-MIS electronic equivalent) or place a DD Form 2861, *Cross-Reference,* denoting the location in the work place of the Hazardous Material Approvals.

A2.3.2. Tab C2. Hazardous Material Inventory. The shop supervisor will keep a listing of all hazardous chemicals stored in the workplace. Tab C2 will not be necessary if no hazardous materials are kept in the shop.

A2.4. Tab D Employee Training and Information. Documentation of employee HAZCOM training (AF Form 55 or equivalent). A cross-reference sheet may be used to denote location of employee training documentation.

A2.4.1. Tab D1. Workplace Specific Hazard Communication Training Program.

A2.4.2. Tab D2. OSHA Specific Substance Training Requirements. Exposures to certain substances mandate specific training requirements according to OSHA (29 CFR 1910, Subpart Z). This tab will delineate how the work place supervisor will accomplish this training contain the copies of, or will tell specific where the appropriate lessons plans are filed.

A2.5. Tab E Non-Routine Tasks. All tasks identified as non-routine according to paragraph **2.3** will be listed or negative documentation supplied. Any information other than that specified in this attachment will not be kept with the HAZCOM binder.

A2.6. Tab F Spill Plan. A spill plan outlining how workplaces will respond in the case of a hazardous materials spill is required. This will be outlined in the Workplace Specific Hazard Communication Training Program so a cross reference may be used to denote the location of the spill plan.

Attachment 3

WORKPLACE SPECIFIC HAZARD COMMUNICATION TRAINING TEMPLATE

WORKPLACE SPECIFIC

HAZARD COMMUNICATION
PROGRAM TRAINING

(ADOPTED FROM AFI 90-821 para 2.7.2)

This handbook belongs to:

ORGANIZATION: XX SQ/Office Symbol

SHOP: XXXXXXXXX (ESOH-MIS Code)

Approving Agencies:

Bioenvironmental Engineering_____DATE_____

Public Health_____DATE_____

Fire Department_____DATE_____

Wing Safety_____DATE_____

NOTE: This training plan must be approved by the four agencies listed above IAW AFI 90-821, *Hazard Communication*, paragraph 2.7.1. It should be routed as the order dictates above. This plan may be scanned and/or routed electronically to all four agencies for approval.

1. PURPOSE: This training supplements the "Workplace Hazard Communication Program" by providing the student (employee) a format for receiving employee information and training. This workbook is tailored to meet your workcenter's specific requirements.

2. OBJECTIVES: Enable employees to identify hazardous chemicals used in their respective work areas and the precautions to take during hazardous chemical use/handling.

3. TABLE OF CONTENTS:

I. Introduction

II. Routine Operations/Tasks in Your Workplace Involving Hazardous Chemicals (AFI 90-821, paragraph 2.7.2.1.1 and 2.7.2.1.2)

III. Non-Routine Operations/Tasks with Hazardous Chemicals (AFI 90-821, section 2.9)

IV. "Workplace Hazard Communication Program Binder" and most recent Bioenvironmental Engineering Survey (AFI 90-821, paragraph 2.7.2.1.3)

V. Labeling (AFI 90-821, paragraph 2.7.2.1.4)

VI. Material Safety Data Sheet (MSDS) (AFI 90-821, paragraph 2.7.2.1.5)

VII. Physical and Health Hazards

VIII. Method and Observations to Detect Presence or Release of a Hazardous Material in the Workplace

IX. Protective Measures (AFI 90-821, paragraph 2.7.2.1.6)

X. Emergency Procedures (AFI 90-821, paragraph 2.7.2.1.7)

XI. Conclusion

GENERAL ACRONYMS/DEFINITIONS

1. STUDENT'S GUIDANCE: It is conceivable that this workbook contains the most important information you will ever receive. If retained and applied, this information could maintain your health and prolong your life.

5. TARGET POPULATION: All personnel who handle or use hazardous chemicals.

I. Introduction

A. Your rights: By law (29 Code of Federal Regulations, 1910.1200); you have the right and are required to receive information and training regarding the **hazardous chemicals** that you handle or work with. This information and training is the *"Hazard Communication Program",* commonly referred to as *HAZCOM*. You may also hear it referred to as the "Right-to-know" program. This program deals specifically with your supervisor informing you of the hazardous

chemicals within your workplace. It also provides you the training required to safely work with and around hazardous chemicals. You were first introduced to this program when you received the "Department of Defense Federal Hazard Communication Training Program". The training you are about to receive is a continuation of that program and addresses the hazardous chemicals you will be exposed to, established protective measures, and how to find the information needed to protect yourself. You can expect to receive some aspect of this program for as long as you work with or around hazardous materials.

B. Your Responsibilities: Under AFI 91-202, *The U.S. Air Force Mishap Prevention Program*, you have specific responsibilities. You are required to follow the training you are given, comply with Personal Protective Equipment (PPE) requirements, including its use, inspection, care, and give due consideration to personal safety and the safety of fellow workers.

C. Methods of Recourse: If you feel you have not received information which you need or have a right to under the Hazard Communication Program, talk to your supervisor. Any hazards encountered that have not been previously identified or briefed should be brought to your supervisor's attention. You may also contact Public Health at extension 654-3123.

II. Routine Operations/Tasks in Your Workplace Involving Hazardous Chemicals. (AFI 90-821, paragraph 2.7.2.1.1 and 2.7.2.1.2)

The operations/tasks listed below involve working with one or more hazardous chemicals. Ensure you are trained before attempting to accomplish any task involving hazardous materials. Refer to (insert reference from Technical Orders (TO), Job Safety Analyses (JSA), BE survey letters, Operating Instructions (OI) or specific task lists (example below can be used for listing tasks if not otherwise referenced). The below example can be deleted if not used.

OPERATION/TASK: XXXXXXXXXX

Personnel have potential contact, absorption, ergonomic and ingestion hazards during aircraft washing. Individuals are detailed to perform B-1B aircraft washing activities. Citri-kleen is sprayed or brushed onto the aircraft and allowed to set for 20 minutes. Personnel then scrub and spray down the aircraft with water and rinse it thoroughly. Actual exposure can last up to four hours for a spot wash or 8 hours for a full wash per day. Personnel use approximately 500 gallons of citri-kleen per month. The aircraft is parked inside of the hangar and washed indoors. Personnel must be careful to prevent water/soap solution from getting into mouth, eyes and face. Rubber gloves, rubber apron and face shield are worn to minimize hazards as well as good personal hygiene is practiced to reduce the risk of ingestion.

CHEMICALS USED/PRESENT
6850013907816 Aircraft Wash Soap (MSDS reference Number)

PPE WORN/REQUIRED
Nitrile Gloves
Face Shield ***and*** Chemical Splash Proof Goggles
Butyl Rubber Apron

HAZARD CATEGORY
Flammability – Yes
Carcinogenicity – No

OPERATION/TASK: XXXXXXXXX

Personnel perform overhaul operations to the integrated drive generator on a non-routine basis. During this process the shop breaks down the generator to troubleshoot if necessary. Personnel use oil for lubrication during this process.

CHEMICALS USED/PRESENT
1) 9150002704057Oil Std
2) 9150007822627Oil Std

PPE WORN/REQUIRED
Nitrile ***or*** Neoprene Gloves
Military Issued Coveralls

HAZARD CATEGORY
Flammability - Yes
Carcinogenicity – No

III. Non-Routine Operations/Tasks with Hazardous Materials (AFI 90-821, section 2.9)

Non-routine tasks are tasks that are included within the work center but are performed infrequently (such as solvent tank change-out every 3 months, changing parts washer solution every 4 months, semi-annual oil changes on compressors, etc.) or temporary duties outside an individual's Air Force Specialty Code (AFSC) or job series.

(Choose one)
This work center does not perform non-routine tasks:

OR

The following are the the Non-Routine Tasks performed by this work center. These tasks can be found in the workcenter HAZCOM Program binder, located in Bldg XXXX / Room XXXX

OPERATION/TASK: XXXXXXXXXX

Personnel have potential contact, absorption, ergonomic and ingestion hazards during aircraft washing. Individuals are detailed to perform B-1B aircraft washing activities. Citri-kleen is sprayed or brushed onto the aircraft and allowed to set for 20 minutes. Personnel then scrub and spray down the aircraft with water and rinse it thoroughly. Actual exposure can last up to four hours for a spot wash or 8 hours for a full wash per day. Personnel use approximately 500 gallons of citri-kleen per month. The aircraft is parked inside of the hangar and washed indoors.

Personnel must be careful to prevent water/soap solution from getting into mouth, eyes and face. Rubber gloves, rubber apron and face shield are worn to minimize hazards as well as good personal hygiene is practiced to reduce the risk of ingestion.

FREQUENCY OF OPERATION/TASK: every 3 months, semi-annually, every 3 years, etc.

CHEMICALS USED/PRESENT
6850013907816 Aircraft Wash Soap (MSDS reference Number)

PPE WORN/REQUIRED
Nitrile Gloves
Face Shield *and* Chemical Splash Proof Goggles
Butyl Rubber Apron

HAZARD CATEGORY
Flammability – Yes
Carcinogenicity – No

OPERATION/TASK: XXXXXXXXX

Personnel perform overhaul operations to the integrated drive generator on a non-routine basis. During this process the shop breaks down the generator to troubleshoot if necessary. Personnel use oil for lubrication during this process.

FREQUENCY OF OPERATION/TASK: every 3 months, semi-annually, every 3years, etc.

CHEMICALS USED/PRESENT
1) 9150002704057Oil Std
2) 9150007822627Oil Std

PPE WORN/REQUIRED
Nitrile *or* Neoprene Gloves
Military Issued Coveralls

HAZARD CATEGORY
Flammability - Yes
Carcinogenicity – No

IV. Workplace Hazard Communication Program Binder and Bioenvironmental Engineering Survey (AFI 90-821, paragraph 2.7.2.1.3)

This training will begin by reviewing our "Workplace Hazard Communication Program Binder" which contains all areas of our work area/shop specific written HAZCOM program specified in AFI 90-821, *Hazard Communication* and GOODFELLOWAFBI 48-103, *Hazard Communication (HAZCOM) Program*. Our Bioenvironmental Engineering Survey reports will

also be reviewed. These two items will provide you with the background information on which we base today's training.

Know where these documents are kept for your review.

Workcenter HAZCOM Program Binder:
- Located in XXXX XXXXXXX Bldg # XXXXX / Room # XXXXX

Most recent BIO survey letter:
- Located in the work center HAZCOM Program binder
  Bldg # XXXXX / Room # XXXX

V. Labeling (AFI 90-821, paragraph 2.7.2.1.4)

To ensure employees are aware of all hazardous material within their workplace, OSHA requires all containers of hazardous materials brought into or used within a workplace to have the contents labeled, tagged, or marked.

A. The chemical manufacturer, importer, or distributor is required to label, tag, or mark each container with:

1. The identity of the hazardous material
2. Appropriate hazard warnings include target organ if applicable
3. Name, address, and phone number of the manufacturer, importer, or distributor

These labels, tags, or markings will not be removed, defaced, or changed. If it becomes necessary to replace a label, tag, or marking due to damage or loss, a DD Form 2521 (8" x 11") or DD Form 2522 (4" x 6"), *Hazardous Chemical Warning Label*, will be used. One of these forms will also be used to meet the labeling requirements for existing stocks of unlabeled materials and for transferring, repackaging, or distributing of bulk quantities of hazardous materials into other containers (breakdown quantities).

B. The supervisor will ensure that each container of hazardous chemicals in the workplace is at a minimally labeled, tagged, or marked with:

1. The identity of the hazardous chemical to include the common name
2. Appropriate hazard warnings.
3. If the container is used or transported for use outside of the workplace, the name, duty section and phone number of the responsible individual will be included.
4. Mailing address and telephone number for the manufacturer or distributor.

C. Stationary containers may have their contents identified using signs, placards, or other such written material in place of labels as long as the alternative method identifies the container to which it is applicable, and maintains the required information listed in this handbook.

D. Small quantity containers, when filled from a larger container, used, and emptied by one employee during one shift within the workplace, will be marked, as a minimum, with the name of the material in use. The source container will have the required OSHA markings.

Warning labels may be formatted with either message or symbol which will identify the chemical and communicate the hazards of the chemical within the container. Labels may also address:

First aid - The label may explain what to do if the chemical comes in contact with eyes or skin or if it is ingested or inhaled.

Fire - The label may list the type of extinguisher to use if the chemical is flammable, and if it should catch fire.

Spills - Warning labels may contain information on how spills should be handled.

Handling and Storage - The label will provide storage information and may list the type of PPE required to handle/use the chemical, and conditions such as temperature conditions to avoid.

VI. Material Safety Data Sheets (AFI 90-821, paragraph 2.7.2.1.5)

Material Safety Data Sheets (MSDS) are designed to help you understand how to work safely with chemicals in your work area. Although MSDSs may vary in appearance and length, most MSDSs will have approximately 8 to 10 sections which explain the proper ways to handle and store chemicals in your work area. An MSDS also provides information on health hazards of the chemical, precautionary measures to follow, and emergency procedures. Some MSDS will list OSHA Permissible Exposure Limits (PEL) and/or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV). These are limits that below which personnel should not see any adverse effects after 8 hrs of exposure (typical work day).

- Know where MSDSs are kept
  - MSDS'S are located in Bldg # XXXXX / Room # XXXXX
- MSDSs must be accessible to all personnel

HAVE AN MSDS AVAILABLE WHEN SEEKING MEDICAL ATTENTION

EXPLANATION OF THE MATERIAL SAFETY DATA SHEET

CHEMICAL IDENTIFICATION
The introductory section of the Material Safety Data Sheet (MSDS) includes the chemical manufacturer's name, address and emergency phone number, the chemical name, trade name, and chemical formula. This section helps you identify the chemical on the MSDS.

HAZARDOUS INGREDIENTS
This section lists any hazardous ingredients to include common names of ingredients found within the chemical that can be a health hazard to you. In this section you might also see the

terms TLV and PEL. Both terms are used to express the airborne concentration levels of a Chemical Abstract Service (CAS) Number, which will usually be listed in this section the MSDS. The CAS numbers identify specific chemicals according to information published by the American Chemical Society.

PHYSICAL DATA

This section lists important physical properties of a chemical such as the boiling point, vapor density, percent volatile, appearance and odor. This information helps determine the degree of hazards associated with the chemical in different work environments. For example, vapor density describes the weight of a vapor relative to an equal volume of air (air=1). If a chemical has a vapor density greater than 1, the vapor will be heavier than air and tends to fall and hug the ground.

FIRE AND EXPLOSION DATA

This section helps you determine the chemical flash point, which is the temperature at which a chemical will release enough flammable vapors to ignite. Chemicals that ignite at or above 100°F are classified as flammable. In addition, this section usually lists the chemical's upper and lower flammability limits, proper types of extinguishing media required to safety extinguish the fire (example Co2, water, foam, etc.), special firefighting procedures, and any unusual fire and explosion hazards associated with the chemical.

HEALTH HAZARD DATA

This section describes health effects including signs and symptoms associated with being overexposed to the chemical through ingestion, inhalation and skin or eye contact. The information will include: the acute (immediate) and chronic (long term) effects of overexposure to the chemical. Whether the chemical is a known carcinogen (cancer-causing agent), emergency and first aid procedures to follow in case of overexposure, whether overexposures may arise or require immediate medical attention, and medical conditions that may be aggravated upon contact with the chemical. If you work in an area where overexposure is possible, safety equipment may be needed to protect you.

REACTIVITY DATA

The information contained in this section helps you determine if the chemical will react with other chemical or conditions. Chemicals that are reactive (unstable) may explode, burn, or release toxic substances under certain conditions. In addition, this section usually tells you if the chemical is stable or unstable and list any chemicals or substances that might be incompatible with the chemical.

SPILL OR LEAK PROCEDURES

This section lists the procedures to follow when a chemical is accidentally released or spilled. It will also cover types of cleanup and protective equipment needed to safely contain or clean up a spill as well as proper ways to dispose of the chemical.

The spill procedures for this work center: add spill procedures.

SPECIAL PROTECTION INFORMATION

This section lists the types of special protective equipment (respirators, gloves, eye protection, and ventilation) that is recommended to be used when with the chemical. Remember, there are various types of protective equipment that are specially designed for certain tasks. Consult with your supervisor to ensure you are using the correct type for the work you are performing.

SPECIAL PRECAUTIONS

The last section usually discusses special precautions to be taken to during handling and storage of the chemical. Also, this section will usually discuss any other health or safety concerns that have not already mentioned in another section of the MSDS.

VII. Physical and Health Hazards

The specific chemicals used during a particular operation or task will be addressed during the training or orientation for that operation or task. This information can also be found:

Consult label and MSDS for information on specific chemicals before handling or use.

VIII. Methods and Observations to Detect Presence or Release of a Hazardous Material in the Workplace

(1) Continuous Monitoring Devices: Explain-Ex: This shop does not contain any continuous monitoring devices.

(2) Monitoring Conducted by the Supervisor: Supervisors of any action involving use of or potential contact with hazardous chemicals shall be knowledgeable of hazards and conditions required to mitigate hazards. He/she should also be aware of symptoms which may be caused by the hazardous chemical(s) and observe assigned personnel for signs of exposure.

(3) Visual Appearance: Many chemicals have a distinct color and others, by their lack of color, could be visually confused with water. Certain colors can be distorted depending upon the lighting and the color of the material that the chemical is in contact with. For these reasons, be extremely careful when attempting to identify an unknown spill by color alone.

(4) Odor: Chemicals can also have a distinctive smell, such as an oily or alcohol-like smell. Unfortunately, some chemicals are nearly odorless. In these cases, remain aware of your or a co-worker's physical reactions. Burning eyes, nose or throat, prickly skin, loss of coordination, and dizziness are a few signs of exposure to a hazardous chemical.

(5) Monitoring by Bioenvironmental Engineering: May be performed as a part of a survey, when a new process or chemical is introduced into the workplace, or when over-exposure to a chemical is suspected.

IX. Protective Measures (AFI 90-821, paragraph 2.7.2.1.6)

Controlling chemical hazards often require a combination of protective measures: administrative controls, engineering controls, and personal protective equipment. We will examine how these controls are used.

(1) Administrative Controls

(a) Information and Training: In order to recognize the need for protection against a hazard, you need to be aware that a hazard exists. This information is passed to you through Hazard Communication Training, technical data, and on-the-job training (OJT).

(b) Safe Work Practices: Through information and training, you learn the safe work practices to use with chemicals you will use or be exposed to. Common sense also goes a long way.

(c) Good Housekeeping and Personal Hygiene: The goal of good housekeeping is to contain and remove hazards through proper storage, proper cleanup, and the prompt removal and correct disposal of chemical wastes. Correct personal hygiene around hazardous chemicals involves washing your hands before eating, drinking, smoking, prompt removal of contaminated clothing, and cleaning of the clothing before wearing again.

(d) Environmental, Medical, and Personal Monitoring: In some workplaces, the hazard of a chemical used requires the use of machines to monitor the air to warn of possible overexposure. Another method is physical exams of the personnel to detect adverse health conditions, both before allowing exposure to a chemical and at specific intervals while working with a chemical. In all workplaces, monitoring by the workers and the supervisors for poor work practices, poor housekeeping, and damaged equipment is the first line of defense against unprotected exposure to hazardous chemicals.

(2) Engineering Controls

(a) Substitution: Finding a less hazardous chemical used within a process, finding a less hazardous process, or finding a less hazardous piece of equipment. Submission of an AFTO Form 22 and/or AF Form 1000 suggesting new procedures for tasks.

(b) Isolation: Using barriers or enclosures to separate the employee from the hazard. Examples within this work area are: Doors/hatches

(c) Ventilation: Providing a constant source of fresh air to the work area or removing airborne hazards at the source. Examples within this work area are: Ensure crew entry hatch is opened while applying sealant within the crew compartment.

(3) Personal Protective Equipment (PPE): Technical data and MSDSs will specify the protective equipment necessary while using specific chemicals.

Location of PPE: Maintenance Bay, Bldg XXXX / Room XXX
XXXXXXX, Bldg XXXX / Room XXX
XXXXXXX, Bldg XXXX / Room XXX

X. Emergency Procedures (AFI 90-821, paragraph 2.7.2.1.7)

When controls fail or there is an accidental release of a hazardous chemical, emergency actions to safeguard life and property must be taken. The following are actions established in this workcenter:

List emergency actions currently in use here as well as reporting procedures, who to contact, and how PPE should be used.

Location of emergency eye wash station(s): Bldg XXXX / Room XXX or this work center does not have one.

Location of emergency shower(s): Bldg XXXX / Room XXX or this work center does not have one.

Location of spill kit(s): Bldg XXXX / Room XXX or this work center does not have one.

As you become familiar with the job, you may be able to suggest ways to improve your operation. Don't hesitate to talk these ideas over with your supervisor.

XI. Conclusion

We've covered some very important information today, information which will permit you to do your job safely and avert health problems in later years.

You should now know and understand:

1. Your personal rights and responsibilities under OSHA.

2. HAZCOM requirements that apply to your job and workplace.

3. The chemical hazards of your workplace.

4. PPE that you need, where to get it and how to use it.

5. How to identify and report hazards.

6. Emergency procedures that apply to your job and workplace.

If you have any doubts or questions, ask your supervisor to go over the material again. Don't shortchange yourself, your family, or the Air Force.

SHOP SUPERVISOR'S SIGNATURE BLOCK

GENERAL ACRONYMS/DEFINITIONS

Administrative Controls - Use of information, training, shift schedules, work practices, housekeeping, and monitoring to reduce or eliminate exposures.

Airborne - Word used to describe something that is in the air.

Air-Purifying Respirator - Type of PPE that uses a special filter or chemical cartridge to remove specific airborne hazards from contaminated air before the wearer inhales it.

Air-Supplied Respirator - Type of PPE that supplies the air that the wearer breathes; includes self-contained breathing apparatus and hose-type supplied-air units.

APP – Approximately.

Barrier Cream - Protective cream applied to the skin to protect against skin contact/absorption hazards; often used in addition to gloves.

Boiling Point - Temperature at which a liquid changes into a gas.

Carcinogen - Health hazard that causes cancer in the exposed individual.

Chemical Abstract Service (CAS) Number - Identifies specific chemicals according to information published by the American Chemical Society.

Chemical Container - Bags, barrels, bottles, boxes, cans, cylinders, drums, reaction vessels, storage tanks, and other vessels used to hold chemicals.

Chemical Family - Name given to a group of chemicals having related structures of properties (e.g., aliphatic hydrocarbons).

Chemical Formula - Way of identifying chemical materials by showing the number of each type of atom contained in one molecule of the chemical.

Chemical Hazard - Any chemical material that can cause health problems, fire, explosion, or other dangerous situations.

Combustible Liquid - Liquid having a flash point at or above 100°F, but below 200°F.

Combustion - The process of burning.

Compressed Gas - Gas stored inside a container at a pressure much higher than normal air pressure; contains a lot of stored energy; a physical hazard due to the potential for sudden release of the stored energy when the gas expands.

Condensation - Process by which an airborne vapor becomes a mist or fume.

Corrosive - Health hazard that burns on contact, causing visible damage and/or irreversible changes to body tissues; also a physical hazard that can burn through inert materials.

Cryogenic - Health hazard that freezes body tissues on contact.

Cubic Meter - A cube measuring 1 meter on each side.

Decomposition Product - Chemical that forms when a material breaks down into simpler molecules; may be hazardous even if the parent material is not.

Degree of Hazard - Measures of how serious an exposure is based on what can happen as a result; takes into account the chemical, exposure route, dosage, number and length of exposures, and individual differences.

Delayed Effect - Health effect that appears slowly over time, rather than right away; can be associated with either single or repeated exposures.

Dermatitis - Cracked, broken, dry skin caused by exposure to health hazards that remove fat from the skin; inflammation of the skin caused by direct contact or systemic exposure to hazardous chemicals.

Dosage - Amount of chemical that enters the body over a specified period of time.

Dust - Airborne particles formed from solids.

Engineering Controls - Use of substitution, isolation, or ventilation to reduce exposure to chemical hazards and the injury or illness caused by such exposure.

Environmental Monitoring - Type of administrative control that involves collecting, measuring, and analyzing air or wipe samples of chemical substances to determine whether a hazard exists, or whether a known hazard is being effectively controlled.

Esophagus - Tube that leads from the throat to the stomach.

Evaporate - Process by which liquids change into the vapor form.

Evaporation Rate - Physical data on the MSDS that describes how fast a liquid evaporates in comparison to a standard having a rate of 1.

Explosive - Chemical material that can undergo a sudden and violent release of pressure and heat.

Explosive Limits - Data on the MSDS that define the ranges of air-chemical mixtures that can explode when exposed to an ignition source; see Upper and Lower Explosive Limits.

Exposure Limit - The maximum amount of chemical in a given volume of air to which workers may be exposed, as averaged over a specified period of time. Most people can be exposed to this airborne limit for an entire working lifetime without developing health effects.

Exposure Symptom - Health effect produced by exposure to a chemical material, such as headache or skin irritation.

Extinguishing Medium - Chemical used to put out a fire.

Eye Contact Hazard - Chemical material that damages or irritates the eye on contact or is systemically absorbed (either with the bulk chemical or its airborne forms), or that can be absorbed through the eyes; an exposure route.

Fire Hazard - Chemical material that ignites and burns easily, or that cause or supports fire in other materials; includes pyrophorics, flammables, combustibles, and oxidizers.

Flammable Liquid - A liquid with a flash point below 100°F.

Flash Point - Lowest temperature at which a liquid gives off enough vapor to ignite in the presence of an ignition source.

Fume - Tiny airborne particles that can form when a solid is melted.

Gas - Physical form of a chemical that is easily compressed and expands to fill its container; has a boiling point below room temperature.

General Ventilation - Type of ventilation system that is used to mix an airborne hazard with fresh air to dilute it and reduce its concentration to safe levels.

Hazard Communication (HAZCOM) Program - Written document that describes how an employer or facility complies with all requirements of the Federal Hazard Communication Standard (29 CFR 1910. 1200).

Hazard Communication Standard - Federal law developed by OSHA to reduce illness and injury caused by chemical hazards in the workplace; requires evaluation of chemical hazards and communication of hazard information to both employers and employees.

Hazard Determination (or Evaluation) - Process of finding out whether a chemical material is hazardous and what the hazards are.

Hazardous Chemical Inventory - List of all hazardous chemicals known to be present in a given workplace; identity/name of chemicals used on this list must match the identity/name used on the warning labels and MSDSs.

Hazardous Ingredient - Chemical in a mixture that presents either a physical hazard or a health hazard.

Health Hazard - Any chemical material that can cause illness or injury when a person is exposed by ingestion, skin or eye contact, skin absorption, or inhalation.

High Toxicity - Description applying to chemicals that can produce either life-threatening or seriously disabling health effects.

Housekeeping - An administrative control that involves containing and removing chemical hazards--e.g., vacuuming, proper storage and handling, prompt removal and correct disposal of chemical wastes.

IDLH - Immediate Danger to Life and Health.

Immediate Effect - Health effect that appears right away-- either during the exposure or shortly afterwards.

Industrial Hygienist - Expert in the recognition, evaluation, and control of safety and health hazards.

Ingestion - The way that a chemical enters the body if you swallow it; an exposure route.

Inhalation - The way that a chemical enters the body when you breathe it through your nose or mouth; an exposure route.

International Agency for Research on Cancer (IARC) - Agency that evaluates the research data on substances tested for their carcinogenic potential. IARC publishes information on carcinogens and potential carcinogens. The IARC listing is one of the references that must be used to identify cancer-causing chemicals on MSDSs.

Irritant - Health hazard that reacts with body tissues at the point of contact causing reddening, itching, tearing, irritation, and/or minor inflammation.

Isolation - Engineering control that involves using an enclosure, barrier, or safe distance to separate workers from exposure hazards.

Liquid - Physical form of a chemical that has no definite shape, but takes the shape of its container; has a boiling point above room temperature.

Local Exhaust Ventilation - Type of ventilation system that captures an airborne hazard as it is released at the source and takes it out of the workplace.

Low Toxicity - Description applying to chemicals that produce only minor health effects--effects that usually go away with or without medical attention when exposure stops.

Lower Explosive Limit (LEL) - Data on the MSDS that defines the minimum amount of airborne chemical that must be present in an air-chemical mixture to make it explosive.

Material Safety Data Sheet (MSDS) - Written document that identifies a chemical material; gives its physical properties; describes known physical hazards, health hazards, and required controls; and identifies correct procedures for putting out fire, cleaning up a spill or leak, disposing of waste, and handling/storing the material safety.

Medical Monitoring - Type of administrative control that involves physical examinations and/or lab tests to establish an individual's baseline health status and check the effectiveness of other controls used to protect an individual from health hazards.

Milligrams Per Cubic Meter (mg/m^3) - Unit used to express exposure limits; defines the mass of chemical contaminant (in milligrams) allowed in each cubic meter volume of air.

Mist - Airborne form of a liquid chemical; consists of tiny droplets.

Mixture - A combination or a solution composed of two or more substances in which they do not react.

Moderate Toxicity - Description applying to chemicals that produce health effects requiring medical attention; damage may be permanent but is neither life-threatening nor seriously disabling.

Monitoring - An administrative control that checks the effectiveness of other controls by analyzing air samples, wipe samples, and personal exposure levels; may involve medical monitoring.

MSDS - See Material Safety Data Sheet.

Mutagen - Reproductive hazard that causes genetic changes in sperm or egg cells.

N/A - Not applicable.

National Toxicology Program (NTP) - Organization that funds and conducts research on chemical substances. NTP publishes lists of carcinogens and potential carcinogens; this list is one of the reference sources that must be used to identify cancer-causing chemicals on MSDSs.

NE - Not established.

ND - Not determined.

Occupational Safety and Health Administration (OSHA) - Federal agency within the Department of Labor that develops and enforces standards for workplace safety and health.

Oxidizer - Chemical material that supplies the oxygen required to start or support fire. Common oxidizers include chlorine gas, oxygen and peroxides.

Parts Per Million (ppm) - Unit used to express exposure limits; defines parts of the chemical allowed in each one million (1,000,000) parts of the air-chemical mixture.

Permissible Exposure Limit (PEL) - Exposure limit set and enforced by OSHA. (See Exposure Limit).

Personal Monitoring - Type of administrative control that involves the worker's wearing a badge or other sampling device to measure exposure to a chemical hazard in the workplace.

Personal Protective Equipment (PPE) - Equipment that protects the individual who wears it by placing a barrier between that individual and a hazard; includes protective eyewear, face shields and masks, gloves, boots, clothing, and respirators.

Physical/Chemical Characteristics - Information on the MSDS that describes the appearance, odor, boiling point, vapor pressure, vapor density, evaporation rate, specific gravity, and water solubility of a chemical material.

Physical Hazard - Any chemical material that can cause fire, explosion, violent chemical reactions, or other similarly hazardous situations.

Polymerization Hazard - Unstable chemical that undergoes a violent reaction and release of energy that produces or releases a hazard when two or more small molecules combine (self-react) to form large molecules called polymers.

Pyrophoric - Chemical material that spontaneously bursts into flame when exposed to air at temperatures below 130°F; no ignition source is needed.

Reactive Chemical - Material that reacts violently on contact with certain other chemical materials to produce or release a hazard.

Recommended Exposure Limit (REL) - Exposure limit recommended by the National Institute for Occupational Safety and Health (NIOSH).

Reproductive Hazard - Health hazard that targets the human reproductive system; category that includes teratogens and mutagens.

RESP - Respirable.

SCBA - Self-contained breathing apparatus.

Sensitizer - Health hazard that produces an allergic-like reaction in some people after repeated exposure.

Skin Absorption - Way that some chemicals pass through the skin on contact and enter the bloodstream; an exposure route.

Skin Contact Hazard - Chemical material that damages or irritates the skin on contact; an exposure route.

Smoke - An airborne mixture of fire, gases, dusts, and fumes.

Solid - Physical form of a chemical that has a definite shape.

Solubility in Water - Physical data element on the MSDS that describes whether or not a material dissolves in water.

Specific Gravity - Physical data on the MSDS that describes whether a liquid is lighter or heavier than water.

Substitution - Engineering control that involves replacing a chemical, process, or piece of equipment with a less hazardous one.

SYN - Synonym.

Synonym - With the same or nearly the same meaning.

Target Organ Chemical - Health hazard that enters the bloodstream and damages specific internal organs or body systems; effects can be delayed.

Teratogen - Reproductive hazard that damages the fetus during its development.

Threshold Limit Value (TLV) - Exposure limit recommended by the American Conference of Governmental Industrial Hygienists (ACGIH). (See Exposure Limit)

Toxicity - Description of the degree of health hazard associated with exposure to a chemical; see Low, Moderate, and High Toxicity.

Transfer Container - Chemical container that does not require labels because only one person handles the container, and it is filled and emptied during the same shift.

Unstable Chemical - Material that violently self-reacts under commonly occurring conditions; a type of physical hazard.

Upper Explosive Limit (UEL) - The maximum amount of airborne chemical that can be present in an air-chemical mixture and still have it be explosive.

Vapor - One airborne form of a liquid chemical.

Vapor Density - Physical data that describes whether the vapor formed by a material is lighter or heavier than air.

Vapor Pressure - Force exerted on the walls of a closed container of liquid by vapor formed above the liquid surface.

Vaporization - Process by which liquids become airborne.

Ventilation - Engineering control that reduces airborne exposure levels either by mixing the hazard with fresh air or by removing it as it is released at the source.

Warning Label - Document affixed to chemical containers (or posted by stationary containers) that identifies the chemical material and all appropriate hazard warnings.

Water-Reactive - Chemical material that reacts with water or moist air to produce or release a hazard.

Work Practices – Procedures normally used to do the job.